

### **REMARKS**

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-2 and 4-17 are presently active in this case. The present Amendment amends Claims 1-2, and 8-9, and adds new Claims 16-17 without introducing any new matter; and cancels dependent Claim 3 without prejudice or disclaimer.

The December 12, 2008 Office Action rejected Claim 8 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 1 and 9 were rejected under 35 U.S.C. § 102(b) as anticipated by Lowe (U.S. Patent Publication No. 2002/0118339). Claims 2-3, and 8 were rejected under 35 U.S.C. § 103(a) as unpatentable over the references Lowe in view of Harradine et al. (U.S. Patent No. 4,864,393, hereinafter "Harradine"). Claim 4 was rejected under 35 U.S.C. § 103(a) as unpatentable over the references Lowe and Harradine, in further view of Nasserbakht et al. (U.S. Patent No. 6,072,443, hereinafter "Nasserbakht"). Claim 5 was rejected under 35 U.S.C. § 103(a) as unpatentable over the references Lowe and Nasserbakht. Claim 6 was rejected under 35 U.S.C. § 103(a) as unpatentable over the references Lowe, in further view of Mølgaard (U.S. Patent No. 6,747,690). Claim 7 was rejected based on official notice. Claims 10-15 were rejected under 35 U.S.C. § 103(a) as unpatentable over the references Lowe, in further view of Hanna et al. (U.S. Patent No. 6,714,665, hereinafter "Hanna").

In response, independent Claim 1 is amended to recite features related to the future estimation of the position of the location of the image, to recite "the display position alteration means using an algorithm that estimates the position of the location of the displayed image at a point of time in the future that is substantially equal to a delay time resulted from the estimation of the position by the algorithm." These features find non-limiting support in Applicant's disclosure as originally filed, for example at least in the

specification from p. 16, ll. 3, to p. 17, l. 13. 12, and in Figure 5, reference numeral 26. Similar features were previously presented in dependent Claim 3, and therefore this claim is herewith cancelled without prejudice or disclaimer. Moreover, dependent Claim 2 is amended to correspond to the changes of independent Claim 1. No new matter has been added.

Independent Claims 8-9 have been amended to recite a similar feature, but directed to a method (Claim 8) and a device (Claim 9). Moreover, new dependent Claims 16-17 are added, reciting features related to the sub-pixel estimation as recited in dependent Claim 2, but new Claims 16-17 depend from independent Claims 8 and 9, respectively. In addition, independent Claim 8 is also amended to correct minor formal issues. Because these changes are only formal, no new matter has been added by the amendments to independent Claim 8.

In response to the rejection under 35 U.S.C. § 101, Applicant respectfully traverses the rejection, because the method of independent Claim 8 is tied to a particular machine, being the “image pick-up means” and the “image display means,” indicating means-plus-function claim language. The *In re Bilski* decision requires that a method be either (1) tied to a particular machine or apparatus, or (2) able to transform particular article into a different state or thing. 545 F.3d at 979. *See also Guidance for Examining Process Claims in view of In re Bilski*, Memorandum from John J. Love, Deputy Commissioner for Patent Examination Policy, (Jan. 7, 2009).

Regarding the means-plus-function claim elements “image pick-up means” and the “image display means,” the 35 U.S.C. § 112, sixth paragraph, provisions and the M.P.E.P. clearly provides that such claim elements must be construed in light of the structure that is provided in Applicant’s specification. See M.P.E.P. § 2181, *see also In re Donaldson Co.*, 16 F.3d 1189, 29 USPQ2d 1845 (Fed. Cir. 1994). Applicant’s specification shows at page 17, lines 15-24 an exemplary hardware configuration, and explains that the “image pick-up

means” can be a “camera 1,” and that the “image display means” can be a “display device 8.” (See also Figs. 4-7.) Because the method steps of independent Claim 8 are clearly tied to a particular machine, for example a camera and a display device, Applicant respectfully traverses the rejection under 35 U.S.C. § 101, and requests reconsideration thereof.

In response to the rejection of Claim 9 under 35 U.S.C. § 102(b), in light of the amendments to this claim, Applicant respectfully requests reconsideration of this rejection and traverse the rejection, as discussed next.

Briefly summarizing, Applicant’s independent Claim 9 is directed to an image display device. The image display device includes *inter alia* an image sensor, an image display, a detector configured to detect a position of the eyes of a face by image recognition from an image captured by said image sensor; and a processor configured to alter a position of a location of an image displayed by the image display so as to move the location of the image proportional to a movement of the eyes to follow the position of the eyes based on a detection result of said detector. In addition, the processor is using an algorithm that estimates the position of the location of the displayed image at a point of time in the future that is substantially equal to a delay time resulted from the estimation of the position by the algorithm.

Turning now to the applied references, Lowe is directed to a display apparatus having eye trackers 102, 104 that can located to eye motion 110, 112 of the user, and the detected motion is processed to calculate an effective displacement of the image 114, 116 cause by the eye motion. (Lowe, Abstract, Fig. 1.) Lowe is silent on how the eye trackers can be implemented, but merely explains that “[t]wo trackers 102, 104 are necessary if it is desired to correct for changes in viewing distance during use.” (Lowe, p. 1, ¶ [0018], ll. 3-5.) Accordingly, Lowe is silent on the use of a detector configured to detect a position of the eyes from an image captured by said image sensor, as required by Applicant’s independent

Claim 9. As a fact, the reference Lowe is silent on any use of an image sensor. Moreover, Lowe fails to teach the use of an algorithm that estimates the position of the location of the displayed image at a point of time in the future that is substantially equal to a delay time resulted from the estimation, as further required by Applicant's independent Claim 9.

The pending Office Action acknowledges these deficiencies of Lowe. (Office Action, p. 4, ll. 18-19.) However, the Office Action rejects similar features related to an estimation of parallel movement in the future based on the reference Harradine. (Office Action, p. 4, ll. 26-29.) In addition, the pending Office Action assumes that the combination of Lowe's eye motion detection, and calculation of the effective displacement of the image, with Harradine's sub-pixel motion estimation to convert television standards is obvious. (Office Action, p. 4, ll. 20-22.) Applicant respectfully traverses both of these assertions.

First, Harradine fails to teach an algorithm that estimates the position of the location of the displayed image at a point of time in the future that is substantially equal to a delay time resulted from the estimation of the position by the algorithm, as required by Applicant's Claim 9. Harradine is directed to a system that can calculate motion estimation vectors for television images that can be used for convert television format standards (PAL/NTSC) or for slow motion processors. (Harradine, Abstract, col. 1, ll. 20-25.) Harradine's vector calculator for determining motion uses pixels that are horizontally and vertically spaced out to thereby derive motion vectors between fields of an image. (Harradine, Abstract, ll. 4-12.) In this calculator, the motion is derived between two successive video images (Harradine, col. 4, ll. 12-15.) This allows to interpolate two successive images of a video stream, when they are viewed in slow motion, or when converting between PAL/NTSC formats that have different frame rates. (Harradine, col. 4, ll. 41-53, col. 9, ll. 33-54.) Harradine explains that he uses this particular calculation, because the majority of existing motion estimators are

biased towards the use in video conference type applications, where the subject matter is a person's head. (Harradine, col. 2, ll. 23-28.)

As explained above, Harradine is entirely silent on the estimation of the position of the location of the displayed image at a point of time in the future that is substantially equal to a delay time resulted from the estimation, as required by independent Claim 9. Harradine is silent on any future prediction for a certain time moment that is related to processing time, and also fails to teach anything related to estimation of an image location, but reconstructs a new, interpolated image for successive image, based on motion vectors. (Harradine, Abstract.)

Second, it is not obvious to combine the features of Harradine's motion estimator to perform full-frame image interpolation with Lowe's eye trackers 102, 104 and display screen 108, as next discussed. The pending Office Action asserts that this combination is proper, because allegedly "[i]t would be clear to one of ordinary skill in the art to modify the display in Lowe to include a digital interpolation filter, as used in Harradine, to alleviate image blurring on the screen." (Office Action, p. 4, ll. 20-22) Applicant respectfully disagrees.

The reference Lowe is silent on any image processing, or image capturing by the eye trackers 102, 104, and as discussed above, merely asserts that these devices can track the position of the eyes. Therefore, it is not clear how a motion vector estimator for full-frame image interpolation of Harradine could be used in the trackers 102, and 104, in particular because Harradine merely estimates motion vectors from pre-defined fields in an image. (Harradine, col. 6, ll. 4-13.) In addition, it is not clear how an algorithm for interpolating full-frame images of 50Hz or 60Hz could be incorporated into eye trackers 102, 104, even if *arguendo* we assume that these trackers do perform image capturing and processing. Such modification would require a substantial reconstruction or redesign of the elements of the eye trackers 102, 104, and would clearly change their basic principle of operation. There is no

evidence, nor is there any articulated reasoning that a person of ordinary skill in the art would be motivated to perform such changes or able to make the redesign. See the case *In re Ratti*, 270 F.2d 810, 813, where an obviousness rejection was reversed because the “suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.”

In addition, because the reference Harradine clearly states that his method is *not* dedicated to the tracking of a single person’s head, (Harradine, col. 2, ll. 23-32), Harradine clearly teaches away from any solution that would improve the tracking of eyes for image processing purposes. In this regard, the established case law has held that a reference may be said to teach away when a person of ordinary skill in the art, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. *In re Gurley*, 27 F.3d 551, 553, (Fed. Cir. 1994).

Please note that the decision of *In re Ratti* and *In re Gurley* were not reversed by the decision *KSR v. Teleflex*, 550 U.S. 398 (2007.)

Independent Claims 1 and 8 recite features analogous to the features recited in independent Claim 9, but are directed to a device (Claim 1) and a method (Claim 8). Moreover, Claims 1 and 8 have been amended analogously to recite a similar feature. Accordingly, for the reasons stated above for the patentability of Claim 9, Applicant respectfully submits that the rejections of Claims 1 and 8, and all associated dependent claims, are also believed to be overcome in view of the arguments regarding independent Claim 9.

Consequently, in view of the present Amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in

condition for formal Allowance. A Notice of Allowance for Claims 1-2, and 4-17 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

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